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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,289	10/01/2002	Chung-Kuang Wei	CMOP001 0USA	5713

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NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)
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MERRIFIELD, VA 22116

EXAMINER	
ROY, SIKHA	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/065,289	WEI, CHUNG-KUANG	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1--13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 October 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the region with greater diffusion effect closer to the luminous means as claimed in claim 1 must be shown or the feature(s) canceled from the claim(s). The photo masks used for regions with different diffusion effects as claimed in claim 2 must be shown or the feature(s) canceled from the claim(s). The region closer to the luminous means composed of smaller liquid crystal droplets as claimed in claim 3 must be shown or the feature(s) canceled from the claim(s). The diffuser comprising formed of different sizes of liquid crystal droplets as claimed in claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

Page 4 line 10 'generated form' should be replaced by --generated from--.

Page 4 line 15 'reflective layer 112' should be replaced by --reflective layer 114--.

Page 6 line 4 'embedment' should be replaced by --embodiment--.

Page 6 line 5 'PLDC' should be replaced by --PDLC--.

Appropriate corrections are required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002062528 to Okabe and further in view of U.S. Patent 5,629,785 to Valliath et al.

Regarding claim 1 Okabe discloses (Fig. 1 sections [009], [0010], [0011], [0017] –[0021] in translated document) a backlight unit 1 for a display device comprising luminous means (lamps 2) as alight source for providing light beams, a diffuser 4 (optical diffusion sheet) disposed on the luminous means wherein the diffuser is formed of polymers (polyethylene terephthalate, polystyrene, polyolefine characterized in having anisotropy in diffusion ability. Okabe further discloses that this anisotropic light diffusion sheet is arranged perpendicularly to the linear lamp and thus changes in brightness which appears perpendicularly are diffused by the diffuser and equalization of brightness can be attained.

Claim 1 differs from Okabe in that Okabe does not exemplify the diffuser composed of liquid crystal molecules.

Valliath in relevant art of polymer dispersed liquid crystal display device with asymmetric optical diffuser discloses (column 2 lines 1-19, Fig.2) a PDLC film 12 comprising a plurality of micro droplets 16 composed of liquid crystal material and dispersed in a polymetric matrix 18. It is further disclosed that the PDLC film with twisted nematic compounds of micro droplets provides variable diffusion effects.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include PDLC film comprising liquid crystal molecules as taught by Valliath in the anisotropic diffuser of Okabe for providing variable diffusion effects, thus yielding uniform luminosity from the backlight unit.

Regarding claim 2 the Examiner notes that the claim limitation that "regions of different diffusion effects formed by using photomasks " is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

Regarding claims 4 and 5 Okabe discloses (Fig. 3 section [0029]) the regions with greatest diffusion effect of the diffuser 21 comprises fibrous light dispersing agent 26 having the shape of the luminous means and corresponding to the location of the luminous means.

Regarding claim 6 Valliath discloses (column 3 lines 8-50 Fig. 2) in the absence of electric field, light is scattered (due to a difference between the index of refraction of the liquid crystal material and surrounding polymer material) by the liquid crystal microdroplets 16 within PDLC film providing one kind of diffusion effect. With the application of electric field the difference in refractive index alters providing different diffusing effect.

Referring to claim 7 Okabe and Valliath disclose one pair of electrodes with one plate disposed on each side of the diffuser for applying electric field.

Regarding claim 8 Okabe and Valliath do not disclose the electric field applied is according to the luminous intensity of luminous means.

Valliath discloses (column 3 lines 31-45) that with the application of electric field between the electrodes through the intermediate region of PDLC film, the intermediate region becomes transparent and light passes through with minimal loss due to scattering. Hence it would be obvious to one of ordinary skill in the art at the time of invention to modify the electric field applied to the PDLC film of the diffuser depending on the luminous means for controlling effective scattering and transmission of light towards the display.

Regarding claim 9 Valliath discloses the diffusing material comprising polymer dispersed liquid crystal molecules.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002062528 to Okabe and U.S. Patent 5,629,785 to Valliath et al. and further in view of applicant's admitted prior art.

Regarding claim 10 Okabe and Valliath do not disclose the reflective layer disposed under the luminous means.

It has been disclosed by the applicant in the Prior Art section (Fig. 1 section [0006]) that the conventional backlight unit comprises a reflective layer 14 disposed under the luminous means 12 for reflecting light upward to increase luminous intensity.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the reflective layer disposed under the luminous means of Okabe and Valliath for reflecting light upward to increase luminous intensity from the backlight unit for the display.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002062528 to Okabe and U.S. Patent 5,629,785 to Valliath et al. and further in view of U.S. Patent 5,881,201 to Khanarian.

Claim 3 differs from Okabe and Valliath in that Okabe and Valliath do not disclose region closer to luminous means composed of smaller liquid crystal droplets.

Khanarian in analogous art of backlighting for display discloses (column 4 lines 5-12) that the light diffusion screen is composed of light scattering particles, the sizes of which determine the angular distribution of the scattered light. Furthermore Khanarian discloses that smaller particles cause a wider distribution of scattering of light whereas larger particles cause mainly forward scattered light.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include particles (micro droplets) close to luminous means in the diffuser of Okabe and Valliath composed of smaller diameter as suggested by Khanarian for

producing wider distribution of scattered light, thus enhancing diffusing effect and resulting in uniform luminous intensity from the backlight unit.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002062528 to Okabe and U.S. Patent 5,629,785 to Valliath et al. and further in view of U.S. Patent 5,881,201 to Khanarian.

Regarding claim 11 Okabe and Valliath fail to disclose plurality of regions of different diffusion effects formed by different sized of liquid crystal droplets.

Khanarian discloses (column 4 lines 5-12) that the light diffusion screen is composed of light scattering particles, the sizes of which determine the angular distribution of the scattered light. Furthermore Khanarian discloses that smaller particles cause a wider distribution of scattering of light whereas larger particles cause mainly forward scattered light.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include particles (micro droplets) in the diffuser of Okabe and Valliath of different sizes-the ones close to luminous means composed of smaller diameter and the ones in the region away from the luminous means composed of larger diameter as suggested by Khanarian for producing different diffusion effects from the diffuser.

Claim 11 essentially recites the same limitation as of claim 3 and hence is rejected for the same reason (see rejection of claim 3).

Claim 13 essentially recites the same limitation as of claim 7 and hence is rejected for the same reason (see rejection of claim 7).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 4,832,458 to Fergason et al., U.S. patent 5,580,932 to Koike and U.S. Patent 6,215,535 to Nakajima et al. disclose liquid crystal material for selectively scattering and transmitting light for display. EP 0918247 to Knight et al. discloses visual display using variable diffusibility device.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879

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